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Apparatebau GmbH

INLINE FLOW INDICATOR

CATALOGUE NO: 470 000-003

OPERATION MANUAL

Edition 12/15

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GENERAL DESCRIPTION

The **INLINE FLOW INDICATOR** consists of a splash-water-proof electronics housing (IP 65) which is installed on a PVC fitting. Inside the inline fitting with pipe diameter of 20 mm a paddle wheel is mounted. When liquid flows through the pipe, 4 magnets inserted in the paddle wheel set in rotation produce a measuring signal in the transducer (coil). The frequency modulated induced voltage is proportional to the flow of the fluid.

The power supply is made by 4 AA batteries of 1.5 V DC.

The **INLINE FLOW INDICATOR** can measure flow rates from 9 l/min (= 0,15 l/sec) up to 200 l/min (= 3,33 l/sec).

The device can only be used to measure water resembling fluids. The flow sensor is not designed for gas flow measurements.

TECHNICAL DATA

Measuring range:	9 l/min (= 0,15 l/sec) up to 200 l/min (= 3,33 l/sec)	
Accuracy:	< 4% of reading from 200 l/min down to 50 l/min	
	< 7% of reading from 50 l/min down to 18 l/min	
	< 10% of reading from 18 l/min down to 9 l/min	
Pipe diameter:	20 mm	
Pressure rating:	10 bars	
Hose connection:	Hose nozzle for hose diameters of 25 up to 27 mm	
Fluid temperature:	0°C ... +50°C	
Materials:	Inline fitting:	PVC
	Paddle wheel:	PVDF
	Axle:	Ceramic
	O-Ring:	FPM
	Electronics housing:	PC
	Front plate foil:	Polyester
Batteries:	4 x 1.5 V DC (AA)	
	Autonomy min. 2 years at +20°C	
Protection type:	IP65	

PREPARATIONS

The **INLINE FLOW INDICATOR** can only be used to measure water resembling fluids.

The pipe must be completely filled with the liquid, i.e. air bubbles must not be present.

The device must be protected from constant heat radiation (e.g. direct exposure to sunlight) and other environmental influences (e.g. magnetic fields).

The **INLINE FLOW INDICATOR** can be installed either vertically or horizontally. When installed vertically, the device should be fed from underneath.

BATTERY REPLACEMENT

To replace the batteries the cover of the electronics housing has to be removed. For that purpose the hinged cover has to be opened. After loosening the 4 screws the blue cover can be carefully removed. Please take care that the connecting cables between cover and base of the electronics housing are not damaged.

When the batteries become low, the display blinks but the device still works.

The message LOW BATT appears only when the batteries are too low to ensure function of the device.

To keep the calibration data, change the batteries as soon as blinking of the display occurs and before the LOW BATT message appears.

SWITCHING ON

Before switching on the device, the blue cover of the electronics housing has to be removed (see BATTERY REPLACEMENT).

The main switch is located at the rear side of the blue cover beside the 4-pin screw terminal. To switch on the device the slide switch has to be moved to the left (position ON).

Please note that there is no need to switch off the device after use. A fresh set of batteries allows continuous operation of more than two years.

LOCKING THE ENTER KEY

The ENTER key of the **INLINE FLOW INDICATOR** can be locked to prevent access to the parameter definition menu. Therefore the blue cover of the electronics housing has to be removed (see BATTERY REPLACEMENT).

The locking switch is located at the rear side of the blue cover in the lower right quarter of the electronics board. To lock the ENTER key the slide switch has to be moved upwards (position LOCK).

DISPLAY

In display mode the following parameters can be displayed:

- Flow rate in liters per minute | 86.7 L/M |
- Total volume (main totalizer) in liters | 75862 L |
- Volume of actual operation (daily totalizer) in liters | 1862 L. |
  (**Only a point behind the unit** differentiates the daily totalizer display from the main totalizer display)

The display selection is made by repeatedly pressing the key



Please note that the actual flow rate will be displayed for only 10 seconds. Thereafter the display switches to the main totalizer.

To reset the daily totalizer the keys



and



must be pressed simultaneously for 2 seconds whilst **daily totalizer display is active**.

PARAMETER DEFINITION

The PARAMETER DEFINITION MENU is accessible by pressing the keys



and



simultaneously for 5 seconds whilst **flow rate display is active**. This function is only available when the ENTER key has not been locked (refer to LOCKING THE ENTER KEY, page 5)

For the menu structure please refer to STRUCTURE OF THE PARAMETER DEFINITION MENU, page 8.

The navigation inside the PARAMETER DEFINITION MENU is made via the key



The activation of a menu item as well as the confirmation of a selection is made via the key



To enter digital values please use the key



Through this key the value of the active digit will be increase by one (within the range 0 …9).

To move the position of the decimal point during entering digital numbers (e.g. K-factor) press the following keys simultaneously:





STRUCTURE OF PARAMETER DEFINITION MENU

LANGUAGE SELECTION

LANGUAGE	ENGLISH	
	DEUTSCH	
	FRANCAIS	
	ITALIANO	
	ESPANOL	

SELECTION OF ENGINEERING UNITS

incl. selection of digits after decimal point:

UNIT	FLOW	LIT/SEC	DECPOINT 0
		LIT/MIN	DECPOINT 1
		LIT/H	DECPOINT 2
		M^3/MIN	DECPOINT 3
		M^3/H	
		...	
	TOTAL	LITRE	
		M^3	

INPUT OF K-FACTOR

FACT. K	TEACH N	K=075.25

DAMPING SELECTION

The damping is specified in the sub-menu. It prevents fluctuations of the flow rate display. There are 10 damping levels available. The lowest level (FILTER 0) has no damping effect, the highest level (FILTER 9) has maximum damping effect.

FILTER	FILTER 0	SLOW
	FILTER 1	FAST
	...	
	FILTER 9	

RESETTING THE MAIN TOTALIZER

The main and daily totalizers are reset in this menu at the same time. The reset procedure is only carried out when the ENTER key is pressed at the END position of the PARAMETER DEFINITION MENU.

TOTAL	RESET N
	RESET Y

RETURN TO DISPLAY MODE

END	SAVE YES

FACTORY SETTINGS

Language:	English
Unit of flow rate:	Liters per minute, 1 digit after decimal point
Unit of totalizers:	Liters
K-factor:	075.25
Filter:	Damping level 2 / slow